



TME/2011

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POLYAMIDE (ARAMID) CALENDER PAPER

1.0 General :

This specification governs with the quality requirements of calender polyamide (Aramid) paper made from specially formulated polyamide fibres with a high degree of thermal stability. The material is used upto maximum operating temperature of 220⁰ C.

2.0 Application :

Used as inter-turn insulation, slot liner of electrical machines.

3.0 Compliance with National Standards :

There is no national standard covering this type of material.

4.0 Dimensions and Tolerances :

4.1 Sizes :

Thickness, width and length of the sheet / tape shall be as specified in BHEL order.

4.1.1 Preferred thickness and Tolerances :

0.05, 0.08, 0.13, 0.18, 0.25, 0.38, 0.51 and 0.76 mm with tolerances as per Annexure I.

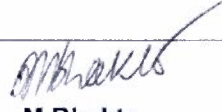


4.1.2 Preferred Width and Tolerances :

Sheet: 600mm and 900mm with tolerance of ±15 mm.

Tape: 20, 25 and 30 mm with tolerance of ±0.5 mm.

5.0 Finish:

The material shall be free from surface or edge defects, inclusions, voids, pin-holes and cracks which may affect its suitability for use. Visual properties shall be consistent from lot to lot.

Revision : 00 Date: 16.12.10	Distribution	Qty.	Approved :  M Bhakta		
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6.0 Test Samples :

A roll of at least 50 meter length for tape or 2 m² sample from inner portion of sheet roll of ordered thickness from the same batch shall be supplied for testing and approval.

7.0 Properties :

Properties of polyamide calender paper should be as per Annexure-I

8.0 Additional information:

Presently Nomex Gr-410 of M/s Du-pont matches this specification. Any material inferior than this shall not be acceptable.

9.0 Acceptance Criteria:

Material shall be accepted on the basis of the following :

- a) Compliance certificate furnished by the supplier.
- b) Test certificate furnished by the supplier and/or testing carried out at BHEL end.

10.0 Test Certificates:

Unless otherwise stated, three copies of test certificates shall be supplied along with each consignment giving following information:

TM 10477, Rev. 00: Polyamide (Aramid) calender paper.
BHEL Order No.
Manufacturers/Suppliers Name :
Trade name/mark, if any :
Batch/Lot No.
Quantity supplied
Test results

In addition, the supplier shall ensure to send one copy of test certificate along with the dispatch documents to facilitate quick clearance of the materials.



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11.0 Packing and Marking :

Rolls shall be suitably packed to prevent damage during transit and storage. Each consignment shall be legibly marked or labeled with the following information:

TM 10477: Polyamide (Aramid) calender paper.
BHEL Order No.
Manufacturers/Suppliers Name :
Batch/Lot No.
Trade mark, if any :
Sizes and Quality supplied

12.0 Referred Standards (Latest Publications including Amendments) :

- 1) ASTM D 257

ANNEXURE I CLAUSE 7.0 ,

Nominal thickness	STD Length	Property Specification										Property for Ref				Quality	
		Average thickness	Dielectric	Mean Tensile strength	Cross direction Tensile strength	Mean Elongation	Cross direction Elongation	Initial tear strength	Basis Weight	Machine Direction Elongation Modulus	Cross Direction Elongation Modulus	Cross direction Initial tear strength	#Defect	#Splice			
mil	mm	Micro m	KV	N/cm	N/cm	%	%	N	g/m ²	N	N	N	N	N	Min Limit	Max Limit	
2	0.05	49	0.66	32.4	12.5	5.7	4.2	6.8	35.3	0.5	0.98	3.5	10	I			
3	0.08	68	1.20	56	25.9	6.9	4.2	7.9	57.2	0.74	1.86	5.8	10	I			
5	0.13	118	2.30	115	51	10	6.4	21.8	108	1.67	3.53	12	9	I			
7	0.18	164	4.20	180	96	13	9	36.4	162	2.65	5.2	18.2	5	I			
10	0.25	230	6.00	248	117	11	9	56.3	229	3.92	6.86	36	5	I			
15	0.38	348	8.90	399	215	14	11	94.2	370	6.86	11.77	56.5	7	I			
20	0.51	474	12.00	504	294	13	10	133	518	8.83	14.22	91.6	7	I			
30	0.76	693	14.00	770	519	13	10	194	788	N/A	N/A	162.9	7	I			